

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for the continuous preparation of a chemical compound in at least one reactor, wherein at least one of the reactors is a shell-and-tube reactor which has a shell and at least one internal tube located within the shell, ~~wherein at least one of the internal tubes has, at least in part, a noncircular cross section and a helical configuration in the region in which it is surrounded by the shell.~~

Claim 2 (Original): The process as claimed in claim 1, wherein the noncircular cross section has both mutually opposite straight sides and mutually opposite round sides or has the shape of an oval or the shape of an ellipse.

Claim 3 (Currently Amended): The process as claimed in claim 1[[or 2]], wherein the helix has from 1 to 2000 complete turns in the region surrounded by the shell.

Claim 4 (Currently Amended): The process as claimed in ~~any of claims 1 to 3~~ claim 1, wherein from 1 to ~~20 000~~ 20,000 internal tubes having a noncircular cross section are located in a helical configuration within the shell.

Claim 5 (Currently Amended): The process as claimed in ~~any of claims 1 to 4~~ claim 1, wherein an olefin is reacted with a hydroperoxide in the presence of at least one zeolite catalyst to form an epoxide in the reactor.

Claim 6 (Currently Amended): The process ~~as claimed in claim 5, for the continuous preparation of a chemical compound comprising the stages (i) to (iii)~~

(i) reaction of the olefin with hydroperoxide to give a mixture comprising epoxide, unreacted olefin and unreacted hydroperoxide,

(ii) separation of the epoxide and the unreacted olefin from the mixture resulting from stage (i) to give a mixture comprising unreacted hydroperoxide,

(iii) reaction of the mixture comprising unreacted hydroperoxide with olefin, wherein at least one shell-and-tube reactor as defined in ~~claims 1 to 4~~ claim 1 is used for the reaction of the olefin in at least one of the stages (i) and (iii).

Claim 7 (Currently Amended): The process as claimed in claim 6 for the continuous preparation of a chemical compound, wherein an olefin is reacted with a hydroperoxide in the presence of at least one zeolite catalyst to form an epoxide in the reactor comprising the stages (i) to (iii)

(i) reaction of the olefin with hydroperoxide to give a mixture comprising epoxide, unreacted olefin and unreacted hydroperoxide,

(ii) separation of the epoxide and the unreacted olefin from the mixture resulting from stage (i) to give a mixture comprising unreacted hydroperoxide,

(iii) reaction of the mixture comprising unreacted hydroperoxide with olefin, wherein at least two isothermal shell-and-tube reactors as defined in ~~claims 1 to 4~~ claim 1 connected in parallel are used in stage (i) and at least one adiabatic shaft reactor is used in stage (iii), wherein the noncircular cross section has both mutually opposite straight sides and mutually opposite round sides or has the shape of an oval or the shape of an ellipse, wherein the overall selectivity of the reaction is in the range of from 90 to 96%, based on hydroperoxide, and the total hydroperoxide conversion is at least 99.5%.

Claim 8 (Currently Amended): The process as claimed in any of claims 5 to 7 claim 5, wherein propene is used as olefin, hydrogen peroxide is used as hydroperoxide and a titanium zeolite catalyst is used as catalyst.

Claim 9 (Original): The process as claimed in claim 8, wherein the titanium zeolite catalyst has the TS-1 structure and methanol is used as solvent.

Claim 10 (Original): A shell-and-tube reactor for the continuous preparation of a chemical compound, comprising a shell and at least one noncircular cross-section internal tube located within the shell, wherein at least one of the internal tubes having the noncircular cross section is at least partly helical in the region in which it is surrounded by the shell.

Claim 11 (Original): The shell-and-tube reactor as claimed in claim 10, wherein the noncircular cross section has both mutually opposite straight sides and mutually opposite round sides or has the shape of an oval or the shape of an ellipse.

Claim 12 (Currently Amended): The shell-and-tube reactor as claimed in claim 10[[or 11]], wherein the helix has from 1 to 2000 complete turns in the region surrounded by the shell.

Claim 13 (Currently Amended): The shell-and-tube reactor as claimed in ~~any of claims 10 to 12~~ claim 10, wherein from 1 to ~~20 000~~ 20,000 internal tubes having a noncircular cross section are located in a helical configuration within the shell.

Claim 14 (Currently Amended): The shell-and-tube reactor as claimed in ~~any of claims 10 to 13~~ claim 10, wherein at least one region of at least one of the internal tubes contains at least one fixed-bed catalyst.

Claim 15 (Original): The shell-and-tube reactor as claimed in claim 14, wherein at least one fixed-bed catalyst is a titanium zeolite catalyst.

Claim 16 (Currently Amended): An apparatus for the continuous preparation of a chemical compound, comprising at least one shell-and-tube reactor according to ~~any of claims 10 to 15~~ claim 10.

Claim 17 (Original): The apparatus as claimed in claim 16 further comprising at least one separation device.

Claim 18 (Currently Amended): The apparatus as claimed in claim 16[[or 17]], comprising at least two shell-and-tube reactors ~~according to any of claims 10 to 15 for the continuous preparation of a chemical compound~~ connected in parallel, comprising a shell and at least one noncircular cross section internal tube located within the shell, wherein at least one of the internal tubes having the noncircular cross section is at least partly helical in the region in which it is surrounded by the shell, wherein said apparatus further comprises a distillation column downstream of this these at least one two shell-and-tube reactor reactors and at least one shaft reactor downstream of the distillation column.

Claim 19 (Currently Amended): ~~Use of a shell and tube reactor according to any of claims 10 to 15 for~~ A method of improving the selectivity in the preparation of a chemical compound wherein the preparation is carried out in a shell-and-tube reactor according to claim 10.

Claim 20 (New): The process as claimed in claim 1, wherein an olefin is reacted with a hydroperoxide in the presence of at least one zeolite catalyst to form an epoxide in the reactor comprising the stages (i) to (iii)

(i) reaction of the olefin with hydroperoxide to give a mixture comprising epoxide, unreacted olefin and unreacted hydroperoxide,

(ii) separation of the epoxide and the unreacted olefin from the mixture resulting from stage (i) to give a mixture comprising unreacted hydroperoxide,

(iii) reaction of the mixture comprising unreacted hydroperoxide with olefin, wherein propene is used as olefin, hydrogen peroxide is used as hydroperoxide and a titanium zeolite catalyst having the TS-1 structure is used as catalyst, wherein at least two isothermal shell-and-tube reactors as defined in claim 1 connected in parallel are used in stage (i), wherein the noncircular cross section has both mutually opposite straight sides and mutually opposite round sides or has the shape of an oval or the shape of an ellipse, and at least one adiabatic shaft reactor is used in stage (iii), wherein the overall selectivity of the reaction is in the range of from 90 to 96%, based on hydroperoxide, and the total hydroperoxide conversion is at least 99.5%, wherein the helix has from 1 to 2000 complete turns in the region surrounded by the shell and wherein from 1 to 20,000 internal tubes having a noncircular cross section are located in a helical configuration within the shell.